Special Issue #3 for St. Louis AASA Convention

EDUCATION U.S.A.

A Special Weekly Report on Educational Affairs

February 25, 1958

USA OUT-PRODUCES RUSSIA IN YOUNG SCIENTISTS AND ENGINEERS

America is producing more scientists and engineers, relative to its youth population, than Russia, Robert J. Havighurst, Professor of Education, University of Chicago, told AASA delegates yesterday.

"Currently, the United States is producing between 45,000 and 50,000 engineers and physical scientists and mathematicians a year," the educator said, adding: "This is the greatest number we have ever produced, except for a few years after World War II when the colleges were filled with excess young men making up for education lost in the war. This is about 20 per thousand 22-year-olds, which is the highest rate of production we have seen, except for the immediate post-war years. Russia currently graduates about 17 per thousand 22-year-olds.

"Often it is said that the Russians are producing more than twice as many engineers as we do. This is true in gross numbers. The comparison should be made however, between the totals of engineers, physicists, chemists and mathematicians, because the Russians use engineers for the same work that is often done by physicists, chemists and mathematicians in the USA. We produce more people in these latter categories than the Russians do. From the point of view of 'effort', then, we are outproducing the Russians in scientists and engineers. This rather weakens the argument that the USA should imitate the Russian educational system in order to get more scientists and engineers."

Referring to the quality of engineers and scientists, Havighurst said "nobody of any consequence has said that American engineers and scientists are inferior to those of Western Europe or Russia." Everybody agrees, he continued, that America is short of the high-level, creative scientist, engineer and science teacher. But, he emphasized, the Russians complain of such shortage, too.

The job of American educators, Havighurst advised, is to find able young people who do not now go to college or do not finish college, to get them into and through college--and to get a reasonable fraction of them to go into science careers. There are three principal target groups for the effort at discovering and motivating youth with potential for scientific work: One is the group of boys from the top quarter of the popluation in ability, who enter college but do not graduate. There are about 95,000 boys a year in this group under present conditions. A second target group is the 60,000 boys in the top quarter of ability who do not now enter college. A third target group is the 165,000 girls in the top quarter of ability who enter college but go in small numbers into science careers.

"Most young people with good intellectual ability would make good or excellent scientists or science teachers if they worked at the job," Havighurst said. He added: "There is no such limit as a rare quality of special aptitude for science and mathematics. These fields are so broad that anyone with general intellectual ability and industry can make good in them. Therefore, there is no need to use tests for scientific aptitude, as distinquished from tests of general scholastic aptitude, to discover the future scientists in high school.

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SCIENTISTS OVERNIGHT?

America cannot create a nation of young scientists over night when its youngsters have grown up with the idea that "egg-headism" is something to be avoided as "pink" or "screw-ball", Pauline Frederick, National Broadcasting Co. correspondent at the United Nations, declared last night.

"By what magic," she asked, "can we turn these boys and girls into scientists by tomorrow when they have been nurtured on the belief that education is a means to getting a good-paying job, and the quicker you get it, the faster you make money?"

But, the commentator and news analyst went on to ask another question: "Will the youngster who begins with rocketry in kindergarten--or his own backyard--become an Einstein or a Nils Bohr?" Paul Henry Lang, she said, has pointed out that what we are really talking about are engineering technicians. True scientists are made of different stuff...they are first of all thinkers, philosophers and humanists.

"Are we to hitch the minds of our youth to a Russian satellite instead of to the star of our own destiny as a nation whose greatness has rested on recognition of the dignity of the human being and his right to peaceful association with his fellow men?" Miss Frederick asked, adding: "If a crash program in rocketry does develop minds to design more effective ways of making war, is that what we want? If we want peace, where is the crash program to develop minds that understand how to deal with the human problems that must be solved if weapons are ever to be relegated to the museums?"

The National Association of Broadcasters, she explained, is suggesting the evolution of a program that is summed up in a 3-word challenge: "Learn--and Live." As outlined by President Harold E. Fellows, she continued, it would have these objectives: To develop among all Americans a respect for learning and knowledge, making ignorance unfashionable. To stimulate among young people a sense of exciting adventure in growing to their full intellectual capacity. To impress upon their elders, especially parents, their duty to guide and support youth in obtaining more knowledge and training.

"The challenge to us as grownups tonight is obvious," Miss Frederick said, and "it is to foster the full intellectual and human stature of our young people so that they are able to bring about a Third Empire of Peace, and, if it's not too late, truly to grow up ourselves.

NATIONAL COVERAGE

Out-of-town newspaper correspondents covering conclave include (l. to r.) Education Writers G. K. Hodenfield, AP; Robert Dishon, Milwaukee Journal, and Ruth Dunbar, Chicago Sun-Times. Not shown is Reese Wells, Memphis Commercial Appeal. In addition, more than 20 representatives of educational magazines and newspapers have checked in at the press room in Kiel Auditorium.

MORE RESEARCH NEEDED

U.S. Commissioner of Education Lawrence G. Derthick declared last night that budgets of school systems should reflect the primary need for educational research, "the best way to make our best better, to win the debates and to spread that best everywhere."

He explained that the Office of Education launched a cooperative research program two years ago in partnership with the State Departments of Education and the universities that promises to be one of the most significant developments of this decade. The Office of Education now devotes to cooperative research more than a third of its entire operating budget--almost as much money as the entire Office budget of only three years ago. "We look forward to a tremendous expansion in our cooperative research program as the future comes," Derthick said.

"To help meet the grave educational issues of the times," Derthick said, "the Administration has proposed a program of Federal aid to stimulate support for our schools at critical points." He added: "As more and more people come to understand the purposes of these proposals, their merits are increasingly recognized. In the first place, the State plan approach with State and local responsibility for administration rules out any chance of Federal control. Secondly, these proposals make a direct attack on the severe loss of brain power among our young people, in which some 200,000 a year slip through our fingers and use their superior talents in ways which deprive the Nation and themselves of their greatest potential. To conserve these precious human resources is the purpose of the testing, guidance and counseling provisions. Likewise, the plan of Federal scholarships (also administered by State authorities) contributes to this essential national security measure.

"The plan to strengthen mathematics and science instruction in no way overlooks the equal importance of other basic subjects in the curriculum. This proposal stems from the disturbing and dangerous imbalance that now exists in these fields, and the provisions are designed to correct this imbalance and put mathematics and science back on an equal plane."

GIRLS OUTSTRIP BOYS

Frank R. Pauly, Director of Research, Tulsa, Okla. public schools who for five years has been studying sex differences of school age children, reported to delegates that he is more convinced than ever that boys should enter school later than girls. His opinion is based on evidence that boys have a slower average maturation rate than girls. "If boys are admitted six months or so later than girls, (regardless of what age is used), there will be less frustration for boys, their parents and their teachers, and also less 'drop-outs' of boys in high school because of failing or unsatisfactory work," Pauly declared.

ROADBLOCKS TO BETTER SCIENCE PROGRAMS

James G. Harlow, Dean and Professor of Education, College of Education, University of Oklahoma, urged the AASA to conduct a research study on the roadblocks which are preventing constructive action in school science and mathematics programs. Harlow cited six roadblocks which govern general thought about education in the two fields: Identification of science with technology. Overgeneralization of the term "school" and overgeneralization of "scientist", "engineer", and "mathematician". Polarization of science and education by sex. The public image of the scientist. Problems in science education are recent and short-term.

"Thirty years ago," Harlow said, "one couldn't get a hearing for the problems of education in the sciences and mathematics; we were not then bedazzled by jet planes, TV, rockets and satellites." He added: "Today, many education writers are suddenly discovering this old problem of American education, and their sudden illumination of it makes many people think that the problem is new. But the problem is old--at least as old as the turn of the century."

HIGH SCHOOLS MUST REDOUBLE EFFORTS

High schools must redouble their efforts to prepare youth to meet the unpredictable challenges ahead, according to James R. Mitchell, Director of Teacher Placement and Professor of Education, Purdue University. He cited these things which must be done:

- Continuous appraisal of the high school program and its product and interpretation of the results to staff members and the public. Correction of limitations and strengthening of weaknesses in the program offered.
- Constant emphasis on the fundamentals, the 3 R's, and many more, because the basic subjects are not sufficient to meet the needs of high school students in this day.
- Provision of guidance services necessary to identify the unique interests, aspirations and talents of all youth who attend the secondary schools.
- Organize the program in such a way as to give maximum challenge to all students in relation to their abilities; but especially to challenge the intellectually gifted student.

CHEMISTRY LABMOBILE

Small high schools in Oklahoma are getting their science programs via a labmobile, Robert C. Fite, Director of Arts and Sciences Extension, Oklahoma State University, explained yesterday. The mobile chemistry labmobile experiment was started by the university, he said, in an attempt to provide a practical method of stimulation to science programs in small high schools. The labmobile represents an effort to enrich the high school science curricula within the existing framework of school districts and limited budgets, he said.

Eighteen schools were organized into a unit to be served by the mobile lab. The unit was equipped with apparatus and supplies to provide laboratory experiences for as many as 20 chemistry students in each of the 18 schools. The materials are transported in a station wagon from school to school, and are shuttled into the classrooms by the students for regular bi-weekly lab sessions.

This arrangement, Fite said, is permitting schools to offer a very strong course in high school chemistry without the necessity of a large investment in laboratory space, supplies and equipment.

This is a special AASA Convention Daily edition of EDUCATION U.S.A. to help you take home a brief summary for use in your community and with your staff. Beginning March 4, EDUCATION U.S.A. will be published in Washington each Tuesday and sent by airmail to reach your desk by Wednesday. Further information is given in the masthead below.

EDUCATION U.S.A.—A Special Weekly Report on Educational Affairs. Published weekly, September through May, by the National School Public Relations Association and the Division of Press and Radio Relations, National Education Association.

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Subscription Price: (published weekly, September through May)—$15 per annual subscription.

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